



# National Transportation Safety Board Aviation Accident Final Report

<b>Location:</b>	RESERVE, NM	<b>Accident Number:</b>	FTW98GA286
<b>Date &amp; Time:</b>	06/27/1998, 2024 MDT	<b>Registration:</b>	N14835
<b>Aircraft:</b>	Lockheed SP-2H	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>		<b>Injuries:</b>	2 Fatal
<b>Flight Conducted Under:</b>	Part 137: Agricultural		

## Analysis

The airplane had made a dry pass on the fire zone, then circled around to make a second pass and release its load of 2,450 gallons of retardant. According to witnesses, the airplane struck trees while in a nose low, right wing low attitude. Upon ground impact, the airplane exploded and burned. Investigation revealed no evidence of preimpact airframe, engine, propeller, or flight control failure/malfunction. The first officer, an initial attack trainee pilot, was in the left seat and the captain was in the right seat. Toxicology tests of the first officer indicated 0.031 ug/ml brompheniramine, 0.011 ug/ml chlorpheniramine in kidney fluid, and 0.142 brompheniramine, 0.072 chlorpheniramine in liver fluid. Both medications are over-the-counter antihistamines with sedative effects.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Failure of the copilot to maintain both lateral and vertical clearance from the trees, and failure of the captain to provide adequate supervision of the flight.

## Findings

Occurrence #1: IN FLIGHT COLLISION WITH OBJECT  
Phase of Operation: MANEUVERING

### Findings

1. (C) ALTITUDE/CLEARANCE - NOT MAINTAINED - COPILOT/SECOND PILOT
2. (C) SUPERVISION - INADEQUATE - PILOT IN COMMAND
3. OBJECT - TREE(S)

## Factual Information

### HISTORY OF FLIGHT

On June 27, 1998, at 2024 mountain daylight time, a Lockheed SP-2H (U.S. Navy P2V-7), N14835, owned and operated by Neptune Aviation Service, Inc., of Missoula, Montana, and contracted to the U.S. Forest Service, was destroyed when it collided with trees about 5 miles west of Reserve, New Mexico. The commercial rated captain and airline transport rated first officer were fatally injured. Visual meteorological conditions prevailed, and no flight plan was filed for the public use flight that originated at Silver City, New Mexico, approximately 1956.

According to both the U.S. Forest Service and Neptune Aviation Service, Inc., the crew of N14835 (call sign "Tanker 8") had been engaged in fire fighting operations all day. The first officer, an initial attack trainee pilot, was in the left seat. The pilot in command was in the right seat. Carrying 2,450 gallons of retardant, the airplane had made a dry pass on the fire zone about 2020, then circled around to make a second pass and release its load. According to witnesses, the airplane struck trees while in a nose low, right wing low attitude. Upon ground impact, the airplane exploded and burned.

### CREW INFORMATION

Both the U.S. Forest Service and Neptune Aviation Services, Inc., identified the pilot in command as Jerry David Donahue. Mr. Donahue, age 56, was born on September 7, 1941. He held Commercial Pilot Certificate No. 1708136, dated January 9, 1997, with airplane single/multiengine land and instrument ratings, and private pilot privileges in gliders. He was type rated (VFR only) in the DC-4, S-2, TBM, L-18, L-382, and B-34. He also held type ratings (unrestricted) in the B-17 and P2V. He held Advanced Ground Instructor Certificate No. 2443552, dated December 10, 1990, and Mechanic Certificate No. 475440705, dated February 4, 1974, with Airframe and Powerplant ratings. His first class Airman Medical Certificate, dated February 19, 1998, contained the restriction, "Must wear corrective lenses." At the time of the accident, Mr. Donahue was sitting in the right seat of the airplane.

On January 22, 1997, Mr. Donahue completed cockpit resource management (CRM) training at American Airlines. On April 4, 1998, Mr. Donahue satisfactorily completed instrument and multiengine recurrent training at Flight Safety International. On April 27, 1998, he successfully completed a pilot in command proficiency check in accordance with FAR 61.58. The following day, he qualified as an initial attack air tanker pilot. These latter two checks were accomplished in the Lockheed P2V and Mr. Key served as copilot.

The copilot was identified as Charles Franklin Key. Mr. Key, age 59, was born on July 28, 1938. He held Airline Transport Pilot Certificate No. 2187406, dated May 3, 1997, with an airplane multiengine land rating, and commercial privileges in airplane single engine land. At the ATP level, he held a type rating in the P2V. He also held Flight Instructor Certificate No. 2187406, dated October 6, 1996, with airplane single/multiengine and instrument ratings, and Mechanic Certificate No. 522469578, dated August 9, 1977, with Airframe and Powerplant ratings. His Second Class Airman Medical Certificate, dated February 2, 1998, contained the restriction, "Must wear corrective lenses." At the time of the accident, Mr. Key was reportedly sitting in the left seat.

On February 8, 1997, Mr. Key completed cockpit resource management (CRM) training at American Airlines. On March 3, 1998, Mr. Key qualified as an air tanker pilot. On April 27,

1998, Mr. Key successfully completed a pilot in command proficiency check in accordance with FAR 61.58. These latter two checks were accomplished in the Lockheed P2V and Mr. Donahue served as copilot. (For pilot flight times, see page 3 of this document, Supplement E, and the Pilot/Operator Aircraft Accident Reports, NTSB Forms 6120.1/2, submitted by both the U.S. Forest Service and Neptune Aviation Service, Inc.)

#### AIRCRAFT INFORMATION

N14835 (s/n 148358) was manufactured by the Lockheed Aircraft Corporation in 1961. It was equipped with two Curtis-Wright R-3350-32A engines (s/n W572946, left; W572596, right), each rated at 2,800 horsepower; two Hamilton Standard 24260-337 4-blade composite propellers, and two Westinghouse J-34-36WE turbojet engines (s/n 211265, left; 211234, right), each rated at 1,500 pounds of thrust.

The airplane was maintained under an Approved Aircraft Inspection Program (AAIP) as set forth by the Federal Aviation Administration [Title 14 CFR Part 91.409 (f)(4)]. The last scheduled maintenance event, a 50-hour inspection, was accomplished on June 26, 1998. At that time, the airplane had accrued 7,815 hours time in service. At the time of the accident, an additional 4.72 hours had been accumulated. (For additional maintenance information, see Pilot/Operator Aircraft Accident Reports, NTSB Forms 6120.1/2, submitted by both the U.S. Forest Service and Neptune Aviation Service, Inc.)

#### METEOROLOGICAL INFORMATION

According to National Weather Service (NWS) documents and meteorological observations made at the Grant County Airport (SVC), located 85 miles southeast of the accident site, visual meteorological conditions prevailed throughout the area. This was corroborated by witnesses at the accident site. They also reported the wind to be from the southwest between 5 and 10 mph.

The U.S. Naval Observatory in Washington, D.C., reported sunset and twilight in Albuquerque, New Mexico, occurred at 2024 and 2054, respectively.

#### WRECKAGE AND IMPACT INFORMATION

Members of the U.S. Forest Service (which was made a party to this investigation) accident investigation team interviewed numerous witnesses. Witnesses who actually saw the airplane prior to or during the impact sequence said the airplane was in a banking right turn and commencing an approach to drop its retardant on the fire area. The airplane did not recover to a wings level attitude but remained in the right bank and struck a tree 55 feet above the ground. Angular measurements of the severed trees, as viewed from the point of impact, were between 10 and 12 degrees. Side angle measurements of these trees, measured from the right side of the wreckage path, were 30 degrees. Wreckage was strewn over an area of 300 feet on a magnetic heading of 100 degrees. Slash marks were noted in several trees.

According to Neptune Aviation Service, Inc., (designated by NTSB to be a party to this investigation), measurements taken of the wing flap drive nuts, which were still attached to the jackscrews, indicated the flaps were fully extended (32 degrees). The landing gear jury struts were consistent with a retracted position. An angular measurement of the varicam was 6.5 inches. When this measurement was compared to two other P2V aircraft, it was consistent with an elevator trim tab setting of one degree up (one degree nose down).

Blade spars from both propellers bore high torque signatures. Disintegration of the composite

blades was towards the lower blade root area. All six power recovery turbines (PRT) were recovered. It was the opinion of both Neptune Aviation Service, Inc., and the U.S. Forest Service that the compressors, turbines, vanes, and nozzles exhibited damage consistent with operation beyond the idle setting.

#### MEDICAL AND PATHOLOGICAL INFORMATION

Autopsies were performed on both Captain Donahue (#3301-98) and First Officer Key (#3300-98) by the New Mexico State Medical Examiner's Office in Albuquerque, New Mexico. Toxicology screenings were performed by FAA's Civil Aeromedical Institute (CAMI) in Oklahoma City, Oklahoma. According to CAMI's reports, 0.031 and 0.142 (ug/ml, ug/g) Brompheniramine were detected in Mr. Key's kidney and liver, respectively. In addition, 0.072 and 0.011 (ug/ml, ug/g) Chlorpheniramine were detected in his liver and kidney, respectively. According to a CAMI spokesperson, these two medications are antihistamines and are contraindicated for flight. FAA's deputy regional flight surgeon stated, "At any detectable tissue level, the most common adverse reactions may include drowsiness, sedation, dizziness, faintness and disturbed coordination."

Mr. Donahue tested positive for ethanol but, according to CAMI's deputy regional flight surgeon, it was "most likely from postmortem production."

#### ADDITIONAL INFORMATION

In addition to the Federal Aviation Administration, parties to this investigation were the U.S. Forest Service and Neptune Aviation Services, Inc.

The wreckage was released to the insurance company on August 4, 1998.

#### Pilot Information

<b>Certificate:</b>	Airline Transport; Flight Instructor; Commercial	<b>Age:</b>	59, Male
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Seatbelt, Shoulder harness
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	Airplane Multi-engine; Airplane Single-engine	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 2 Valid Medical--w/ waivers/lim.	<b>Last FAA Medical Exam:</b>	02/02/1998
<b>Occupational Pilot:</b>	<b>Last Flight Review or Equivalent:</b>		
<b>Flight Time:</b>	8337 hours (Total, all aircraft), 291 hours (Total, this make and model), 7740 hours (Pilot In Command, all aircraft), 46 hours (Last 90 days, all aircraft), 25 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

Aircraft Make:	Lockheed	Registration:	N14835
Model/Series:	SP-2H SP-2H	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Restricted	Serial Number:	148358
Landing Gear Type:	Retractable - Tricycle	Seats:	3
Date/Type of Last Inspection:	06/26/1998, AAIP	Certified Max Gross Wt.:	80000 lbs
Time Since Last Inspection:	5 Hours	Engines:	2 Reciprocating
Airframe Total Time:	7815 Hours	Engine Manufacturer:	Curtis Wright
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	R-3350-32WA
Registered Owner:	NEPTUNE AVIATION SERVICE, INC.	Rated Power:	2800 hp
Operator:	NEPTUNE AVIATION SERVICE, INC.	Operating Certificate(s) Held:	
Operator Does Business As:		Operator Designator Code:	CILG

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Dusk
Observation Facility, Elevation:	, 0 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	0000	Direction from Accident Site:	0°
Lowest Cloud Condition:	Clear / 0 ft agl	Visibility	0 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	Light and Variable /	Turbulence Type Forecast/Actual:	/
Wind Direction:	Variable	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	34° C
Precipitation and Obscuration:			
Departure Point:	SILVER CITY, NM (SVC)	Type of Flight Plan Filed:	Company VFR
Destination:		Type of Clearance:	None
Departure Time:	1818 MDT	Type of Airspace:	Class G

## Wreckage and Impact Information

Crew Injuries:	2 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	N/A	Aircraft Fire:	On-Ground
Ground Injuries:	N/A	Aircraft Explosion:	On-Ground
Total Injuries:	2 Fatal	Latitude, Longitude:	

## Administrative Information

Investigator In Charge (IIC):	ARNOLD W SCOTT	Report Date:	08/18/2000
Additional Participating Persons:	JOHN D HUSS; ALBUQUERQUE, NM		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at <a href="mailto:pubinq@ntsb.gov">pubinq@ntsb.gov</a> , or at 800-877-6799. Dockets released after this date are available at <a href="http://dms.nts.gov/pubdms/">http://dms.nts.gov/pubdms/</a> .		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).